CLAIMS

1. A micro-electromechanical switch comprising:

at least one contact electrode; and

a deflecting beam, said deflecting beam contacting said at least one contact electrode by way of a compressible deformable means affixed to at least one end of said deflecting beam or to at least one of said contact electrodes.

2. The micro-electromechanical switch as recited in claim 1, wherein said compressible deformable means is selected from the group consisting of a layer and discrete spring-like elements protruding from said at least one contact electrode.

3. The micro-electromechanical switch as recited in claim 1 further comprising a control electrode coplanar to said at least one contact electrode.

4. The micro-electromechanical switch as recited in claim 3, wherein the deflection of said deflecting beam is governed by applying a voltage between said deflecting beam and said control electrode.

5. The micro-electromechanical switch as recited in claim 4, wherein the voltage required to deflect said deflectable beam to close the micro-electromechanical switch is dependent on k0, the spring constant of said deflectable beam; of the distance between said deflectable beam and said control electrode; and the distance between said deflectable beam and said contact electrode

6. The micro-electromechanical switch as recited in claim 1, wherein said compressible deformable means introduces a non-linear increase to a separating force able to overcome stiction as the micro-electromechanical switch nears its closed position.

7. The micro-electromechanical switch as recited in claim 1, wherein said compressible deformable means is a layer affixed to said at least one contact electrode, said layer being made of a material selected from the group consisting of polymer matrix Parylene and anisotropic electrically conductive film (ACF).

8. The micro-electromechanical switch as recited in claim 6 wherein said separating force able to overcome stiction further depends on spring constants k1, ... kn, wherein n is an integer greater than or equal to 1, said separating force being sequentially added to the force dependent on k0, the spring constant of said deflectable beam, and wherein said force depending on spring constants k1, ... kn, is only activated by the compression of said deflecting beam against said at least one contact electrode.

9. A micro-electromechanical switch comprising:

at least one contact electrode;

a control electrode coplanar to said at least one contact electrode; and

a deflecting beam, said deflecting beam contacting said contact electrode, wherein a compressible elastically deformable means is affixed to a surface of either said deflecting beam or said at least one contact electrode.

10. The micro-electromechanical switch as recited in claim 9, wherein said deflecting beam is deflected by a voltage applied between said control electrode and said deflecting beam.

11. The micro-electromechanical switch as recited in claim 9, wherein said compressible elastically deformable means are discrete spring-like elements protruding from said at least one contact electrode or said deflecting beam.

12. A micro-electromechanical switch comprising :

at least one control electrode;

at least one switching electrode ,

a deflectable conductive beam anchored at one end and positioned across a cavity surrounding said deflectable beam, wherein at least one switching electrode is coated with at least one compressible, conductive layer that is in electrical contact with said at least one switching electrode and which is separated from said deflectable conductive beam by said cavity when the micro-electromechanical switch is in an "off" state.

13. The micro-electromechanical switch as recited in claim 12, wherein said deflectable conductive beam is deflected by a force toward said at least one control electrode and said at least one switching electrode, said force dependent on a spring constant k0 is generated by a voltage applied between said deflectable conductive beam and said at least one control electrode, making contact with said compressible, conductive layer.

14. The micro-electromechanical switch as recited in claim 13 , wherein said deflectable beam closes the micro-electromechanical switch and compresses said compressible, conductive layer with a force dependent on an added spring constant k1, said compression of said compressible, conductive layer adding to a restorative force that restores the micro-electromechanical switch to an open position when said voltage is removed.

15. The micro-electromechanical switch as recited in claim 14, wherein said compressible, conductive layer is positioned on a surface of said at least one switching electrode, said compressible, conductive layer comprising multiple stacked layers, with at least one of said multiple stacked layers having a different spring constant.